Campbell thus obtained very good results, but he found apparently no very great advantage in the same, since he asserted that he had also obtained nearly equally good results with pig iron charged cold. A fifty-ton furnace, which was charged with cold charges prepared from 97*5 per cent, pig iron produced, in the year 1896, 437 tons of steel in a week, which is equal to a month's production of 1,894 tons. Campbell states further that working with direct metal, contrary to pointing to a revolution in the steel industry, involves disadvantages up to a cerrain extent, and did not save as much time as one would have expected. Experiments in many other localities yielded, so far as known to the author, much less favourable results. Talbot was the first who guaranteed to obtain higher production by working with molten pig iron, than by the employment of solid charges. This depends principally on the higher output and the advantages which are attained by his method.

(1.) THE TALBOT PBOCESS.

Talbot proceeded on the general assumption that decarburi-sation proceeds with the greatest intensity if the carbon content of the metal amounts to under 1*5 per cent. In order to bring the high carbon content of the pig iron down to this amount, he adopted the artifice of diluting the pig iron by means of a larger amount of molten steel. As an apparatus, he selected a large tilting furnace, originally of 75 tons capacity, in which at first about 40 tons of steel were produced in the usual way. After complete decarburisation, iron oxide in the form of ore or roll scale was added and heated up, whereon then about 10. tons of molten pig iron were added. A very lively reaction ensued, by which Si, Mn and P were completely eliminated, and carbon partially so, to an extent which corresponded to the quantity of heat stored up. During pouring in the pig iron the action was always so powerful that gas and air must be shut off, and in spite of that a flame given rise to by the CO formed blew out of the furnace doors. The metal was thereafter exposed to furnace, action, and completely decarburised in a short time. When the